

# **MSC-1610**

Socket 370

w/VGA w/Dual LAN w/Audio

PCI Half-Size CPU Card

## **User's Manual**

### **MiTAC INC.**

No.2, Chung-Hsiao street, Chidu, Keelung, Taiwan.

Tel: 886-2-2456-2255

Fax: 886-2-2456-9595

Part Number: : 5611M1610879 R1.1

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## About This Manual

This manual provides information on the MSC-1610 single board computer.

[Chapter 1](#) provides general information, system assignment tables, features and specifications of MSC-1610.

[Chapter 2](#) contains dimensional drawings, jumper setting information and connector pin assignments.

[Chapter 3](#) describes component installations, device driver installations, watchdog timer installation, and DiskOn Chip installations.

[Chapter 4](#) describes AWARD BIOS setup information, BIOS POST code and how to update BIOS.

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# **C h a p t e r 1**

## **Introduction**

This chapter gives a brief introduction and provides the specifications of the MSC-1610 Half-sized single board computer.

### **1.1 Check List**

Before getting started, please check if your MSC-1610 package includes the following items:

- MSC-1610 Socket 370 CPU board x 1pc
- Driver & Utility CD x 1pc
- FDD cable x 1 pc
- HDD cable x 1 pc
- Printer extension cable with bracket x 1 pc
- Audio extension cable with bracket x 1 pc
- COM1/COM2 cable with bracket x 1pc
- USB extension cable. (Option)
- User's manual x 1 pc

### **1.2 Features**

The MSC-1610 is a full featured, industrialized, half-size single board computer with a high-frequency Intel Pentium III<sup>®</sup>, or Celeron<sup>®</sup> processor (FC-PGA & FC-PGA2 package) that brings advanced CPU technology and processing power to the latest PCI applications. The Via Apollo Pro133T Chipset built into the single board computer is the most efficient and reliable way to upgrade existing PCI systems to Pentium III technology.

The MSC-1610 uses the PCI form factor with Socket 370 to fit in FC-PGA and FC-PGA2 processor from Intel. The PCI design contains one gold leaf edge connectors compatible with PCI connectors to allow all peripherals to interface with the processor. This lets the MSC-1610 take advantage of the high pin density and strict electro-mechanical criteria imposed on PCI connectors.

The MSC-1610 single board computer is further enhanced by the CHIPS 69030 Graphics Accelerator to deliver the most advanced graphics and video support available. The 69030 supports a wide variety of monochrome and color panels, such as: Single-Panel, Single-Drive (SS) and Dual-Panel, Dual-Drive (DD), standard and high resolution, passive STN and active matrix TFT LCD, and EL panels. With **HiQColor** technology, up to 256 gray scales are supported on passive STN LCDs. Up to 16.7M different colors can be displayed on passive STN LCDs and up to 16.7M colors on 24 bit active matrix LCDs.

The MSC-1610 combines the many features needed for system operation into one compact single board computer. These include 10/100 TX LAN adapter, Ultra/DMA drive controllers, high performance serial ports, enhanced parallel port, and the latest BIOS features. Additional enhancements to the MSC-1610 include four USB ports and a programmable watchdog timer. Single dual in-line memory module (DIMM) sockets support up to 512MB of synchronous DRAM (SDRAM) memory. An internal 64-bit second level (L2) cache supports 128/512k of memory. The L2 cache speed is half the CPU core frequency. The Celeron L2 cache equals 128k running at full CPU core.



The VIA Apollo Pro133T chipset in the MSC-1610 incorporates the latest microprocessor technology from Intel to provide the increased bandwidth needed to operate your system bus at speeds up to 133MHz. (The VIA Apollo Pro133T chipset uses one chipset for three 66MHz 100MHz and 133MHz system designed in Pentium III, and Celeron processors with speeds of 733, 850 and 1.26 GHz.).

The VIA Apollo Pro133T chipset is a two-chip set comprised of the VT82C694T North Bridge Controller and the VT82C686B South Bridge Controller. PC100/133 SDRAM provide the bandwidth necessary for running demanding software and Internet applications while benefiting from the reliability and cost advantages of SDRAM infrastructure. The VIA Apollo Pro133T chipset is a PCI Rev 2.2 compliant that supports 3.3V and 5V 33MHz PCI operations. The VIA694T chip includes Desktop Power Management support, enhanced DMA controller and an integrated IDE controller with Ultra DMA/100 support. In addition, it provides USB host interface support for four USB ports and a System Management Bus (SMB) with support for DIMM Serial PD.

## 1.3 Specifications

### ➤ Processors Supported

- Intel Pentium III
  - FC-PGA2 133Mhz FSB (1.13GHz-1.26GHz)
  - FC-PGA 100 /133MHZ (500E-1GHz)
- Intel Celeron (FC-PGA & FC-PGA2)
  - FC-PGA2 100MHz FSB (1AGHz- 102GHz)
  - FC-PGA 66 / 100MHz (533A-1GHz)

### ➤ Processor Clock Frequency and Bus Speed

- 66 /100 /133MHz internal frequency and bus speed

### ➤ Memory Capacity

- 32MB minimum
- 512MB maximum

### ➤ DIMM Support

- 1 DIMM, gold contacts, 168-pin
- Non-ECC / ECC compatible

### ➤ Memory Speed Required

- 64 / 72-bit SDRAM ( 66 / 100 / 133 MHz )

### ➤ BIOS

- Hi-Flex Pentium AWARD BIOS, Flash EPROM support, Plug-and-Play compatible
- 2Mb flash upgradeable supporting BIOS upgrade via software
- Full support for Year 2000 and leap-year date functions

➤ **Chipset**

- VIA Apollo Pro133 chipset
  - VT82C694T North Bridge Controller
  - VT82C696B South Bridge Controller
- C&T 69030 AGP bus with Windows accelerator and Video playback.

➤ **Display**

- C&T 69030 integrated 4M SDRAM for the graphics/video frame buffer.
- C&T 69000 integrated 2M SDRAM for option.
  - Support 1/4 VGA, VGA, SVGA, XGA, SXGA, and UXGA panels. It includes the Chips' proprietary TMED™ technology to support 16 million colors on STN/ DSTN panels.
  - Display connector: DB-15 VGA connector for CRT monitor and 2x20 pin header for Flat-panel

➤ **LAN Controller**

- **Dual INTEL 82559** Ethernet controller, 10/100 Tx with RJ-45 connector.
- LAN2 for option.

➤ **EIDE Disk Controller (dual port)**

- Four fixed disk drives supported (two each on primary and secondary)
- PIO Mode 4 and Ultra DMA/100 supported.
- Full support for LS-120 HD floppy drive.

➤ **Floppy Diskette Controller (dual port)**

- Support 2.88MB, 1.44MB/720KB and 1.2MB/360KB floppy drives.

➤ **Serial Ports**

- One RS232, 16C550-compatible, FIFO buffer
- One RS-232/RS-422/RS-485 selectable

➤ **Parallel Port**

- Single parallel port controller with bi-directional compatibility
- EPP and ECP enhanced port modes.

➤ **PS/2 Keyboard and Mouse port**

- Microsoft compatible
- 6-pin mini-DIN connector at rear panel
- Power supplied through +5VDC self-healing fuse

➤ **Universal Serial Bus (USB)**

- Universal Host Controller Interface (UHCI) configuration
- Four USB connectors at rear panel via separate cable and bracket assembly (optional)
- Power supplied through +5VDC self-healing fuse

➤ **Sound**

- AC'97 supported with full duplex, independent sample rate converter for audio recording and playback

➤ **Watchdog Timer**

- Reset CPU automatically if CPU stops operating
- Reset CPU automatically if +5VDC varies more than 10%
- Jumper or software disable/enable

➤ **Disk On Chip of M-system**

- Support one Single Chip Flash Disk in 32Pin DIP JEDEC socket.

➤ **Real-time Clock**

- SGS-THOMSON M48T86MH1 compatible
- 256 bytes of battery-backed RAM
- On chip lithium battery with 10 years data retention.

➤ **Operating Environment**

- Temperature: 0 to 55 °C
- Humidity: 5 to 90% RHNC

➤ **Storage Environment**

- Temperature: -40 to 85 °C
- Humidity: 10 to 90% RHNC

➤ **Power Requirements**

- +5V and +12V

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**Notes:** 1) +5V current draw is processor dependent.  
2) Onboard +3.3 V is regulated down from the +5V source.

---

## 1.4 System Assignments

### 1.4.1 I/O Port Address Map

Address (HEX)	Device
000-01F	DMA controller 1
020-021	Interrupt controller 1
040-05F	Timer 1 & 2
043	Disable Watch-dog timer operation (read)
060-06F	Keyboard controller
070-07F	Real Time Clock, Non Maskable interrupt
080-09F	DMA page register
0A0-0BF	Interrupt controller 2
0C0-0DF	DMA controller 2
0F0	Clear math. Coprocessor busy signal
0F1	Reset math. Coprocessor
0F8-0FF	Math. Coprocessor
1F0-1F8	Fixed disk controller
200-207	Game port
278-27F	Parallel port #2 (LPT3)
2E8-2EF	Serial port #4 (COM 4)
2F8-2FF	Serial port #2 (COM 2)
300-31F	Prototype card / Streaming Tape Adapter
378-37F	Parallel port #1 (LPT2)
380-38F	SDLC, Bisynchronous 2
3A0-3AF	SDLC, Bisynchronous 1
3B0-3BF	Monochrome Display, Parallel port 0 (LPT1)
3C0-3CF	EGA card
3D0-3DF	CGA card
3E8-3EF	Serial port #3 (COM3)
3F0-3F7	Floppy Disk controller
3F8-3FF	Serial port #1 (COM1)
443	Enable Watch-dog timer operation (read)
CF8-CFF	Chipset Address

### 1.4.2 DMA Channel Assignments

Channel	Function
0	Available
1	Available
2	Floppy disk ( 8 bit transfer )
3	Available
4	Cascade for DMA controller 1
5	Available
6	Available
7	Available

### 1.4.3 Interrupt Assignments

Interrupt #	Interrupt Source
IRQ 0	Interval timer
IRQ 1	Keyboard
IRQ 2	Interrupt from controller 2 (cascade)
IRQ 3	Serial port 2
IRQ 4	Serial port 1
IRQ 5	Parallel port 2
IRQ 6	Floppy disk controller
IRQ 7	Parallel port 1
IRQ 8	Real-time clock
IRQ 9	Cascade to controller 1 (IRQ 2)
IRQ 10	Available
IRQ 11	Available
IRQ 12	PS/2 Mouse
IRQ 13	Math coprocessor
IRQ 14	Hard disk controller (Primary)
IRQ 15	Hard disk controller (Secondary)

#### 1.4.4 Memory Address Map

Address ( HEX )	Device
0000000-009FFFF	System memory
00A0000-00BFFFF	Display memory
00C0000-00C7FFF	VGA BIOS ROM
00C8000-00EFFFF	I/O device BIOS ROM or RAM buffer
00F0000-00FFFFFF	System BIOS ROM
0100000-BFFFFFFF	System extension memory

#### 1.4.5 System Timer Map

Timer #	Assignment
1	System timer interrupt
2	DRAM Refresh Request
3	Speaker tone generator





# Chapter 2

## Hardware Configuration

This chapter explains how to properly set the jumpers and how to use the connectors of MSC-1610.

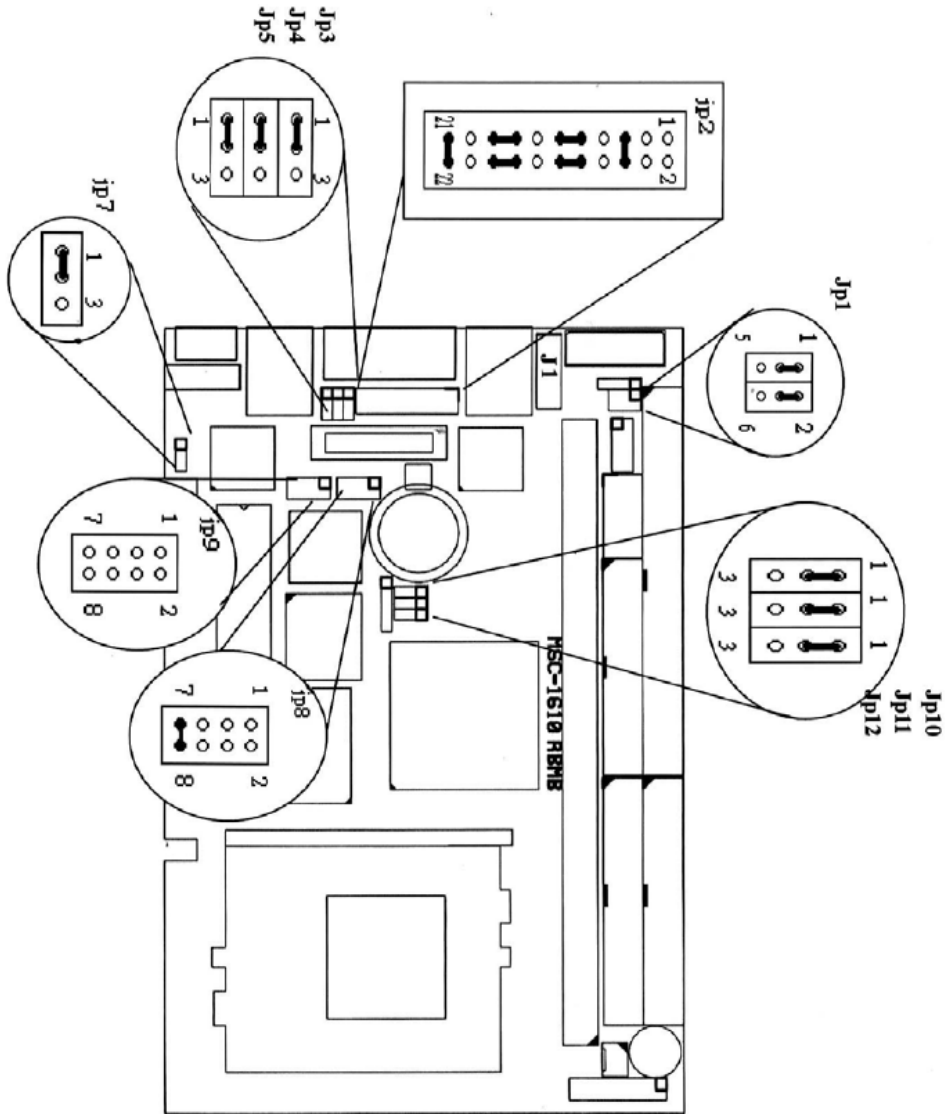
### 2.1 Components Location



This figure shows the locations of all sockets, jumpers, connectors and major components on the MSC-1610. All configuration of the MSC-1610 are in correct positions when it is shipped from the factory. MSC-1610 will function as required without modification. However, in order to allow system tuning, some of the jumpers are designed to be user configurable.

## 2.2 Jumpers

The location of the various jumpers on the MSC-1610 are as shown below:



The succeeding sections provide details on how to properly set these jumpers.

### 2.2.1 CPU Base Speed Select (JP11, JP12)

CPU clock	JP11	JP12
66.6MHZ	2-3	2-3
100MHz	1-2	2-3
Auto /133 MHz	*1-2	*1-2

### 2.2.2 Power Source (JP1, J4, J1)

Power Source	JP1	J4	J1
Use AT Power Supply	3-5, 4-6	NC	NC
Use ATX Power Supply on Backplane	*1-3, *2-4	17-18 to Power Switch	Cable to Backplane

### 2.2.3 COM2 Mode Select (JP2)

Mode	JP2
RS232	*5-6,9-11,10-12,15-17,16-18,21-22
RS422	3-4,7-9,8-10,13-15,14-16,21-22
RS485	1-2,7-9,8-10,19-20

### 2.2.4 VGA Enable / Disable (JP10)

Enable / Disable	JP10
On board VGA ENABLE	*1-2
On board VGA DISABLE	2-3

### 2.2.5 LCD Voltage Selection (JP5)

Voltage Selector	JP5
5V	*1-2
3.3V	2-3

**2.2.6 Disk On Chip (M-System) Address Select (JP9)**

<b>I/O ADDRESS</b>	<b>JP9</b>
D000-D1FF	*1-2
D200-D3FF	3-4
D400-D5FF	5-6
D600-D7FF	7-8

**2.2.7 Watch Dog Timer (JP8)**

<b>Watch Dog Timer</b>	<b>JP8</b>
1 Sec.	1-2
10 Sec.	*3-4
30 Sec.	5-6
Enable	7-8(open)
Disable	*7-8(close)

**2.2.8 RTC CMOS Clear (JP10)**

<b>CMOS Selection</b>	<b>JP10</b>
Normal	*1-2
Clear CMOS	2-3

**2.2.9 ETHERNET Port 1 Enable / Disable (JP4)**

<b>Enable / Disable</b>	<b>JP4</b>
On board ETHERNET ENABLE	*1-2
On board ETHERNET DISABLE	2-3

**2.2.10 ETHERNET Port 2 Enable / Disable (JP7)**

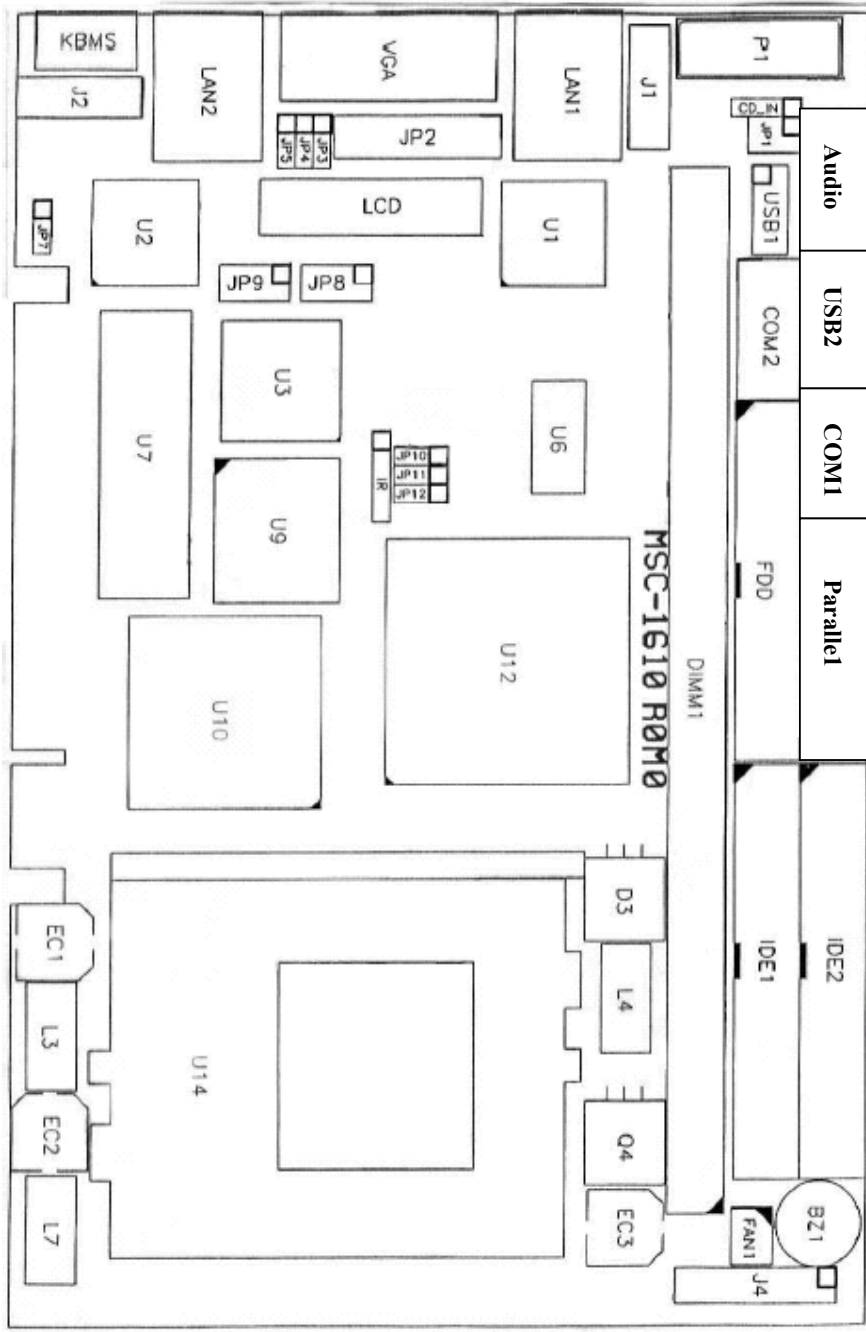
<b>Enable / Disable</b>	<b>JP7</b>
On board ETHERNET ENABLE	*1-2
On board ETHERNET DISABLE	2-3

## 2.3 Connectors

The connectors on the MSC-1610 are used to connect external devices such as hard disk drives, floppy disk drives, printers, keyboard, CRT, panel, serial ports, etc. Some problems encountered with your system may be caused by loose or improper connections. Ensure that all connectors are in place and firmly attached.

<b>Label</b>	<b>Component</b>
Audio	Audio connector
USB2	USB connector
COM1	Serial port 1 connector
Parallel	Parallel port connector
CN1	Parallel port
COM2	Serial port 2 connector
DIMM1	SDRAM Module Connector
FDD	FDD connector
FAN1	CPU fan Connector
IR	Infrared connector
IDE1,IDE2	HDD (IDE) connector
J1	Front panel connector
J2	Standby power connector
J4	CPU fan Connector
KBMS	PS/2 keyboard /Mouse connector
LCD	LCD connector
P1	External power connector
USB1	USB connector
VGA	VGA CRT connector

The locations of these connectors are shown below:



### 2.3.1 Standby Power Connector (J1)

Signals	J2
NC	1
GND	2
NC	3
GND	4
PS-ON to backplane	5
5V(standby)	6

### 2.3.2 Front Panel Connector (J4)

Signals	J1
Power LED, Pin 1+, Pin5-	1-5
External speaker Pin8+,Pin2-	2-8
System Management Interrupt	9-10
Suspend LED, Pin11+, Pin12-	11-12
System reset switch	13-14
HDD LED, Pin15+, Pin16-	15-16
ATX power button	17-18

### 2.3.3 External Keyboard Connector (J2)

Signals	J6
Keyboard clock	1
Keyboard data	2
Mouse Clock	3
Ground	4
Power	5
Mouse data	6

### 2.3.4 USB Port 1 connector (USB1)

Signals	USB0	USB1
VCC	1	10
USB -	3	8
USB +	5	6
GND	7	4
GND	9	NC

### 2.3.5 Infrared Connector (IR)

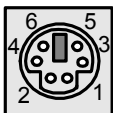


Signals	IR
VCC	1
NC	2
IRRX	3
GND	4
IRTX	5

### 2.3.6 External Power Connector (P1)

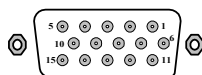
Signals	P1
+12V	1
GND	2
GND	3
VCC	4

### 2.3.7 PS2 Keyboard / Mouse Connector (KBMS)



Pin no.	Signal
1	KB data
2	MS data
3	GND
4	VCC
5	KB clock
6	MS clock

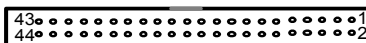
### 2.3.8 VGA CRT Connector (VGA)



Pin no.	Signal	Pin no.	Signal
1	RED	9	N/C
2	GREEN	10	GND
3	BLUE	11	N/C
4	N/C	12	DCC data
5	GND	13	H-SYNC
6	GND	14	V-SYNC

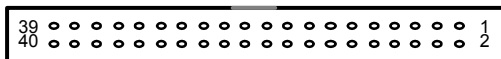
7	GND	15	DDC clock
8	GND		

### 2.3.9 LCD Connector (LCD)



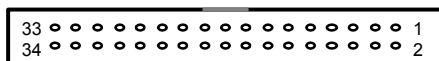
Pin no.	Signal	Pin no.	Signal
1	+12V	2	+12V
3	5V/3.3V	4	5V/3.3V
5	FLM	6	ENAVEE
7	LP	8	ENAVDD
9	M	10	ENABKL
11	GND	12	GND
13	SHFCLK	14	GND
15	GND	16	GND
17	P0	18	P1
19	P2	20	P3
21	P4	22	P5
23	P6	24	P7
25	P8	26	P9
27	P10	28	P11
29	P12	30	P13
31	P14	32	P15
33	P16	34	P17
35	P18	36	P19
37	P20	38	P21
39	P22	40	P23

### 2.3.10 HDD (IDE) Connectors (IDE1, IDE2)



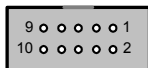
Pin no.	Signal	Pin no.	Signal
1	- RST	2	GND
3	D7	4	D8
5	D6	6	D9
7	D5	8	D10
9	D4	10	D11
11	D3	12	D12
13	D2	14	D13
15	D1	16	D14
17	D0	18	D15
19	GND	20	N.C.
21	DMA REQ	22	GND
23	IOW	24	GND
25	IOR	26	GND
27	IORDY	28	GND
29	DMA ACK	30	GND
31	iINT REQ	32	N.C
33	A1	34	ATA Sel.
35	A0	36	A2
37	CS0	38	CS1
39	-ACT	40	GND

### 2.3.11 FDD Connector (FDD)



Pin no.	Signal
1,3,5,7,9,..... 33	GND
2	Density Select0
4,	N.C
6	Density Select1
8	Index
10	Motor Enable 0
12	Driver Select 1
14	Driver Select 0
16	Motor Enable 1
18	Direction
20	Step Pulse
22	Write Data
24	Write Enable
26	Track 0
28	Write Protect
30	Read Data
32	Select Head
34	Disk Change

### 2.3.12 Serial Port 2 Connector (COM2) – RS232/422/485 Connector



Pin no.	RS232	RS422	RS485
1	DCD	TX-	DATA-
2	DSR	N.C	N.C
3	RX	TX+	DATA+
4	RTS	N.C	N.C
5	TX	RX+	N.C.
6	CTS	N.C	N.C
7	DTR	RX-	N.C.
8	RI	N.C	N.C
9	GND	GND	GND
10	N.C.	N.C.	N.C.

### 2.3.13 CPU Fan Connector (FAN1)

Pin no.	FAN1
1	GND
2	+12V
3	Speed Detect

### 2.3.14 LAN Port Connector (LAN1/LAN2)

Pin no.	J4
1	TX+
2	TX-
3	RX+
4	N/C
5	N/C
6	RX-
7	N/C
8	N/C

### 2.3.15 Parallel Port /COM1/USB2/Audio Connector (CN1)

#### Audio Connector

Pin no.	Signal	Pin no.	Signal
1	MIC IN	2	N.C
3	LINE IN (L)	4	Audio GND
5	LINE IN (R)	6	Audio GND
7	LINE OUT (L)	8	Audio GND
9	LINE OUT (R)	10	MONO OUT

#### USB2 Connector

Pin no.	Signal	Pin no.	Signal
1	USB VCC	2	USB GND
3	USB data 2-	4	USB GND
5	USB data 2+	6	USB data 3+
7	USB GND	8	USB data 3-
9	USB GND	10	USB VCC

#### COM1 Connector

Pin no.	Signal	Pin no.	Signal
1	DCD1	2	DSR1
3	RXD1	4	RTS1
5	TXD1	6	CTS1
7	DTR1	8	RI1
9	COM GND	10	N.C.

#### Parallel Port Connector

Pin no.	Signal	Pin no.	Signal
1	Strobe	2	Auto Form Feed
3	Data0	4	Error
5	Data1	6	Initialization
7	Data2	8	Select
9	Data3	10	GND
11	Data4	12	GND
13	Data5	14	GND
15	Data6	16	GND
17	Data7	18	GND
19	Acknowledge	20	GND
21	Busy	22	GND
23	Paper Empty	24	GND
25	Printer Select	26	GND

# C h a p t e r 3

## System Installing

This chapter describes the procedures for installing the MSC-1610 CPU card into your system and also, procedures for installing device drivers.

The following is a list of typical peripherals required to build a minimum system:

- Power supply and passive backplane (optional)
- IBM PC/AT keyboard
- Display monitor
- Floppy or hard disk with MS-DOS or Flash Disk emulator

To build the system, you may need to install board components (such as CPU, memory), configure the system (setting DIP switches and jumpers for component compatibility or to enable functions), connect the input/output devices, and set up the operating system. For the location of the components and connectors, please refer to the chapter 2 for details.

### 3.1 Installing the DIMMs

The MSC-1610 single board computer accepts 32 MB up to 512MB of SDRAM. The single 168-pin SDRAM Dual Inline Memory Module (DIMM) sockets will accept 64 and 72 bit DIMM modules (3.3V memory – unbuffered SDRAM only).

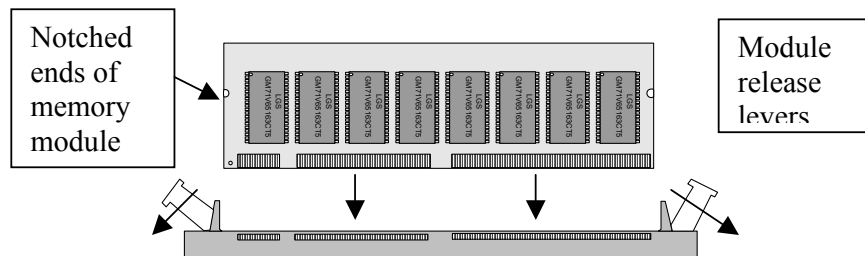
The single board computer will accept only DIMM with gold-plated contacts. To ensure reliable operation at zero wait states, use only 10ns or faster SDRAM DIMM for bus speeds less than 133MHz. For 133MHz or higher, use only 7.5ns or faster SDRAM DIMM.

---

**Note:** Before performing the following procedures, remove the board from the backplane and lay it on a flat ESD-protected, non-static surface.

---

1. Move the module release levers (on each end of the socket) outward, away from the socket.

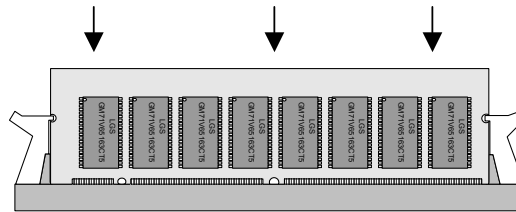


2. Place the DIMM so that the two notches on the contact edge line up with the two alignment nodes in the DIMM socket. Insert the DIMM into the socket at a 90-degree angle.



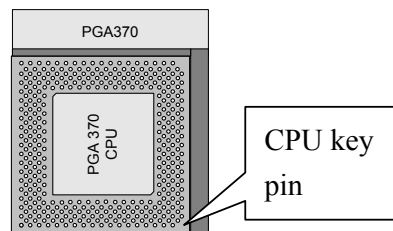
- Using both hands, press downward and guide the DIMM into the socket. The module release levers will return to their upright position when the DIMM is completely seated in the socket. The pegs on the tips of the release levers should align with the notches on both ends of the DIMM.

Apply even downward pressure when installing



### 3.2 Installing the CPU

- Match key-pin on the CPU with key-pin of the PGA370 socket.



- To complete the installation, gently press the CPU onto place. Double check the insertion and orientation of the CPU before pressing. Improper installation will result in permanent damage to the CPU.
- Install the heat sink on top of the CPU properly.

### 3.3 Completing the Installation

To complete the installation, the following steps should be followed:

1. Make sure the power is off.
2. Set the configuration jumpers in accordance with Chapter 2.
3. Install the MSC-1610 CPU card into one of the slots in a passive backplane. Or, just take the MSC-1610 alone as a single board computer.
4. Connect the required I/O cables and peripherals, i.e. floppy disk, hard disk, monitor, keyboard, power supply and etc.

---

**Note:** The color of pin one is usually red or blue, while others are gray.

---

5. Check again and then turn on the power.

### 3.4 VIA Service Pack (VIA 4In 1)

#### 3.4.1 VIA 4 in 1 Driver Installation Procedure:

1. Close all other programs and put driver disk into CD-ROM in your computer.
2. Open VIA Chipset folder  
CDROM:\Chipset\VIA4in1\
3. Double click the setup.exe file. This will automatically open the installation wizard.
4. Bypass the “Welcome” dialog by clicking “Next”
5. This is the README file, which contains similar information to this installation guide. Click “Yes” to

continue.

- You will now be presented with the option of either a normal or quick install. A quick install will automatically install all necessary files without presenting you with any options.
- A normal install can be used to choose to un-install drivers or not install particular drivers.
- **Choose quick install** unless you want to un-install any particular drivers or want to chose particular drivers. After the progress bar shows that the installation is complete, choose the restart option.
- **OR Choose normal install** if you want to un-install any particular drivers or want to chose particular drivers.

6. The 4in1 drivers will automatically detect what drivers you need and will tick or check the boxes corresponding to the necessary drivers. It is recommend that you are an advanced user or want to check un-install instead of install.

### 3.4.2 About VIA 4 IN 1 drivers:

VIA 4 In 1 driver includes four system drivers to improve the performance and maintain the stability of systems using VIA chipsets. These four drivers are: VIA Registry (INF) Drivers, VIA AGP VxD driver, VIA ATAPI Vendor Support Driver and VIA PCI IRQ Miniport Driver.

The 4in1 drivers automatically detect your operating system and will install only what is necessary. For your information:

VIA IDE Bus Master Driver: For Windows NT users, the VIA IDE Bus Mastering driver is the only driver to be installed in your system.

VIA Registry (INF) Driver will be installed. The driver will

enable the VIA Power Management function.

VIA AGP Vxd Driver will provide service routines to your VGA driver and interface directly to hardware, providing fast graphical access.

The IDE Filter driver enables the performance enhancing bus mastering functions on ATA-capable Hard Disk Drives and ensures IDE device compatibility. (Also known as the ATAPI Vendor Support Driver)

VIA PCI IRQ Miniport Driver will be installed under Windows 98 only. It sets the system's PCI IRQ routing sequence.

OS driver	IDE Filter Driver	AGP Driver	Via INF Driver	IRQ Driver	IDE mini-point
Windows 98	Y	Y	Y	Y	
Windows ME	Y	Y	Y		
Windows2K	Y	Y	Y		
Windows NT					Y
Windows XP	Y	Y	Y		

### 3.5 Installing AUDIO Driver

The audio folder and Type D:>\AUDIO\SETUP.EXE (where D equals the location of the setup file) in the run command prompt or double click the setup.exe file. Select "Install".

After the system reboots, the driver will be installed completely.

## 3.6 Installing VGA Driver

The onboard VGA interface of the MSC-1610 supports traditional analog CRT monitors and a wide range of popular LCD, EL, and gas plasma flat panel displays. It can drive CRT displays with resolutions up to 1024x768 in 16.7M colors. It is also capable of driving color panel displays with resolutions of 800x600 in 16.7M colors.

### 3.6.1 VGA Driver for Windows 95/98

Click Start, then Settings, then Control Panel. Start the "Display" applet program. Select the "Settings" page, push the "Change Display Type" button. Push the "Change" button in the "Adapter Type" area.

Push the "Have Disk" button and press "OK".

Specify the path to the new driver and press the <ENTER> key:

Example 1: Insert the drivers disk in the CD-ROM drive, and enter D:\VGA\WIN\_98

Example 2: Type in the name of the directory where you copied the drivers, either on your local hard drive or on a network share.

Example 3: If you're not sure exactly where the drivers are, choose the "Browse..." button and find them.

The "Select Device" dialog box will appear. Select the adapter that corresponds to the one you installed in your machine and click OK.

Windows 95/98 will copy the display drivers to the proper directories on your system. Continue choosing Close until asked to restart your machine from the "Systems

Settings Change" dialog box.

After the system has restarted, you can go back into the Display applet and select alternate screen resolutions and color depths.

### **3.6.2 VGA Driver for Windows NT 4.0**

Step 1: Click the Start button, then go to Settings and click on Control Panel.

Click on the Display icon to start the Display Properties window.

Click on the Settings tab, and then click on Display Type.

In the Change Display Type window, click on Change in Adapter Type.

This will bring up the Select Device Window.

Step 2: Chips & Technologies display drivers can be installed from a manufacturer supplied Installation Diskette, or from the default drivers provided on the Windows NT 4.0 CDROM.

Installing from Manufacturer supplied diskette

-----

In the Change Display window, click on Have Disk. Follow the directions on the screen to supply the directory where the Windows NT driver files are located. Then select OK, or press enter. Select Chips Video Accelerator from Display list provided, then click OK or press enter.

You will then see a warning panel about Third Party Drivers. Click on Yes to finish the install.

Once the installation is complete, the system must be shut down and restarted for the new drivers to take effect.

## Installing Drivers provided on NT 4.0 CDROM

---

In the Change Display window, from the list of Manufacturers, select Chips & Technologies. In the Display Window, select Chips & Technologies Video Accelerator, then click OK or press enter.

You will then see a warning panel about Third Party Drivers. Click on

Yes to finish the install.

Follow the directions on the screen to supply the directory where the Windows NT driver files are located. Then select OK, or press enter.

Once the installation is complete, the system must be shut down and restarted for the new drivers to take effect.

Step 3: When the system has restarted, the default graphics mode ( usually 640x480x256color ) has been automatically selected.

Click the Start button, then go to Settings and click on Control Panel. Click on the Display icon to start the Display Properties window.

Click on the Settings tab.

A new screen setting can be selected using either of the following methods:

- 1: Use the slide-bar in the Desktop Area to select new setting.
- 2: Click on List All Modes. From the list provided, select a new setting, then click OK or press enter.

Click on Test to test the newly selected graphics mode.

Follow the instructions given on the screen. A test screen should appear, followed by the Testing Mode window. Click on Yes to continue. Click on Apply to switch to the new graphics mode.

Graphics modes are changed dynamically on NT 4.0, so you do not need to shutdown and restart for the new screen settings to work.



### 3.6.3 VGA Driver for Windows 2000

- Click the "Start" button, then select the "Settings" tab and click on "Control Panel".
- Click on the "System" icon to start the System Properties window.
- Click on the "Hardware" tab, and then click on "Device Manager" button.
- Double click the "Video Controller" , then the "Properties" button found there.
- Select the "Driver" tab, then the "Update Driver..." button.
- Select the radio button that begins "Search for a suitable driver for my device..." and press the "Next" button.
- Select "Specify a location" Click the "Next" button and select the location of the driver files.

Example D:\vga\win2k\_xp

- Make a selection from the list provided, and click "Next".
- Your system for the changes to take effect.
- When the system has changed, the default graphics mode (usually 640x480x256color ) has been automatically selected.

To change the display resolution and/or colors...

-----

Click the Start button, then go to Settings and click on Control Panel. Click on the Display icon to start the Display Properties window. Click on the Settings tab.

A new screen setting can be selected using either of the following methods:

- 1: Use the slide-bar in the Desktop Area to select new setting.
- 2: Click on List All Modes. From the list provided, select a new setting, then click OK or press enter.
3. Click the Apply button to make changes.

#### **3.6.4 VGA Driver for Windows XP**

- Click the "Start" button, then select the "Control Panel" and click on it.
- Click on the "System" icon to start the Display Properties window.
- Click on the "System" icon to start the System Properties window.
- Click on the "Hardware" tab, and then click on "Device Manager" button.
- Double click the "Video Controller" , then the "Properties" button found there.
- Select the "Driver" tab, then the "Update Driver..." button.
- Click the "Don't search..." radio button and click "Next".
- Click "Have Disk" and then "Browse" to the location of the driver files.
- Select the "chips2k.inf" file. Click "Open". Click "OK".
- Click "Next". If Logo Testing Dialog comes up, click "Continue Anyway".
- You may need to shutdown and reboot the system for the changes to take effect. Follow the prompts.

- When the system has restarted, the default graphics mode (usually 640x480x256color) has been automatically selected.

To change the display resolution and/or colors...

-----  
Click the Start button, then go to Settings and click on Control Panel.

Click on the Display icon to start the Display Properties window.

Click on the Settings tab.

A new screen setting can be selected using either of the following methods:

- 1: Use the slide-bar in the Desktop Area to select new setting.
- 2: Click on List All Modes. From the list provided, select a new setting, then click OK or press enter.

Click the Apply button to make changes.

## 3.7 Configuring Ethernet Interface

Onboard Ethernet interface of the MSC-1610 CPU card supports all major network operating systems. Please follow the steps below to configure the network.

### 3.7.1 Connect the Network Cable

1. Connect a Twisted Pair Ethernet (TPE) network cable to RJ-45 :
  - For 100 BASE-TX, your network cable must be Category 5, twisted pair wiring. If you plan to run at 100Mbps, it must be connected to a 100BASE-TX hub or switch (not a 100 BASE-T4 hub).
  - For 10BASE-T, use Category 3, 4, or 5 twisted pair wiring. If you want to use a residential environment, you must use a Category 5 cable.

2. To configure networking, continue with the procedures specific to your operating system outlined in the latter part of this chapter.

### **3.7.2 Making a Setup Floppy Disk**

If you need to use a floppy disk to install the networking drivers, use MAKEMS.BAT (for Microsoft operating systems) or MAKENW.BAT (for Netware), located in the \MAKEDISK directory on the CD. The format for the command is:

```
D:\LAN\MAKEDISK\MAKEMS.BAT D: A:
```

In the example above, D: is your CD-ROM drive and A: is your floppy drive.

### **3.7.3 Configuring the Network and Installing the Drivers**

#### **Novell NetWare 5.0 Only**

Use the NetWare\* Install program to install driver in Novell NetWare 5.0. For Novell NetWare 4.1x, see the section *Novell NetWare 4.X Only*. For Novell Netware 3.11 and 3.12, see the readme files. For DOS ODI, see the section *DOS and Windows 3.1 Setup for Novell NetWare DOS ODI Clients*. The following procedure is a condensed description of the installation process.

1. From the NetWare console, type LOAD NWCONFIG and press Enter.
2. From the Configuration Options screen, choose "Driver options" and press Enter.
3. Choose "Configure network drivers" and press Enter. If drivers were previously loaded, a list of these drivers appears.
4. Choose "Select an additional driver" and press Enter. A list of drivers appears.

5. Insert the floppy disk or CD and press the Insert key to install an unlisted driver.
6. Specify the correct path to your media if necessary by pressing F3. Press Enter to search the floppy or CD-ROM driver.
7. Highlight the Intel PRO PCI Adapter and press Enter to select it.
8. The succeeding screens ask for frame and protocol types. Use the arrow keys to select specific items or choose the defaults. Select “Save parameters and load driver” to continue.
9. To complete the driver installation process, go back to the Installation Options screen by pressing the Esc key until you see it.
10. Choose Exit to return to the console prompt.

---

**Note:** If the network cannot transmit or receive data after the installation, you may need to modify the frame type in the AUTOEXEC.NCF file.

---

### **Novell NetWare 4.1x Only**

Use the NetWare install program to install driver in Novell NetWare 4.1x. For Novell NetWare 3.11 and 3.12, see the README files. For DOS ODI, see the section *DOS and Windows 3.1 Setup for Novell NetWare DOS ODI Clients*. The following procedure is a condensed description of installation process.

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**Note:** Before installing, either load DOS or NetWare drivers for your computer’s CD-ROM drive or create a floppy disk from the CD on a different computer.

---

1. From the NetWare console, type **LOAD INSTALL** and press Enter.
2. From the Install Options screen, choose “Driver options” and press Enter.

3. Choose "Configure network drivers" and press Enter. If drivers were already loaded, a list of these drivers appears.
4. Choose "Select an additional driver" and press Enter. A list of drivers appears.
5. Insert the floppy disk or CD and choose "Install an unlisted driver" by clicking "Insert".
6. Specify the correct path to your media if necessary by pressing F3. Press Enter to search the floppy or CD-ROM driver.
7. The driver name is displayed: Intel PRO/100+ Adapter. Press Enter to select it.
8. The succeeding screens ask for frame and protocol types. Use the arrow keys to select specific items or choose the defaults. Select "Save parameters and load driver" to continue.
9. To complete the driver installation process, go back to the Installation Options screen by pressing the Esc key until you see it.
10. Choose Exit to return to the console prompt.

---

**Note:** If the network cannot transmit or receive data after the installation you may need to modify the frame type in the AUTOEXEC.NCF file.

---

### **Windows 95 / 98**

#### *Windows 95 / 98 Automatic Configuration*

PCI computers automatically detect and configure PCI-compliant adapters while booting. The BIOS automatically sets the adapter IRQ level and I/O address each time you start your computer.

Start your computer to automatically configure the adapter. Resource configuration is complete when Windows 95 / 98 starts.

If your computer displays an error while booting, it may require additional step to configure. See the section PCI Installation Tips in the latter part of this chapter for more details.

### *Install Network Drivers from Disk*

Have your Windows 95 / 98 installation CD or diskettes available, since you'll be prompted for them when you install the new adapter.

1. After connecting the cable, start Windows 95/98. You will see the New Hardware Found dialog box. If this box does not appear and Windows starts normally, you may need to manually add the adapter. See the MS.TXT readme file in the \MS directory for more information.
2. Click "Driver from disk provided by hardware manufacturer", and then click "OK". You'll see the Install From Disk dialog box.
3. Insert the Driver adapter disk.
4. Specify D:\ (or the appropriate drive letter for the CD-ROM drive) or A:\ (for floppy) as the path, then click OK.
5. Follow instructions from the Windows installation disks and restart when prompted.

### **Windows NT Automatic Configuration**

PCI computers automatically detect and configure PCI-compliant adapters while booting. The BIOS automatically sets the adapter IRQ level and I/O address each time you start your computer.

Start your computer to automatically configure the adapter.

Resource configuration is complete when Windows 95/98 starts.

If your computer displays an error while booting, it may require additional step to configure. See the section *PCI Installation Tips* in the latter part of this chapter for more details.

### **Windows NT Version 4.0 Only**

After connecting the cables and starting Windows NT, you need to install the correct drivers.

1. Double-click the Network icon in the Control Panel.
2. Click the Adapters tab.
3. Click "ADD". You'll see a list of adapters.
4. Don't select an adapter from list. Instead, insert the Driver Disk or CD into the appropriate drive and click Have Disk.
5. Specify the appropriate drive in the dialog box and click OK. Then follow the prompts to complete the installation. When the adapter is added you'll see a new adapter listed in the Network adapters list.
6. Click Close to finish.
7. Restart Windows NT when prompted.

### **Windows NT Version 3.51 Only**

After connecting the cables and starting Windows NT, you need to install the correct drivers.

1. Double-click the Network icon in the Control Panel.
2. Click ADD Adapter.
3. When the list of adapters appears, scroll to the end of the list and select <Other> requires disk from manufacturer and then click Continue.



4. Insert the Driver Disk or CD into the appropriate drive, specify that drive, and click OK.
5. Select the INTEL PRO Adapter and click OK. Drivers and utilities are installed.
6. The TCP/IP Configuration dialog box appears. Enter the appropriate information and click OK. Remove the installation disk or CD.
7. When prompted, restart Windows NT.

**DOS and Windows 3.1 Setup for Novell NetWare DOS ODI Clients**

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**NOTE:** Windows 95/98 users should refer to the previous sections on Windows 95/98. NetWare Client 32 users should refer to the NetWare readme files in the \NETWARE directory.

---

*DOS and Windows 3.1 Automatic Configuration*

PCI computers automatically detect and configure PCI-compliant adapters while booting. The BIOS sets the adapter IRQ level and I/O memory address automatically each time you start your computer.

Start your computer to automatically configure the adapter. Resource configuration is complete when the DOS prompt appears. You can now continue with the procedure below.

If your computer displays an error while booting, it may require additional steps to configure a PCI adapter. See *PCI Installation Tips* in the latter part of this chapter for more information.

*Run setup to Install Network Drivers*

Setup can automatically install NetWare DOS ODI client

drivers for you or display a readme file with installation instructions for other NOS drivers.

1. If your computer already has network drivers installed, restart the computer without loading them. If the drivers are loaded from the AUTOEXEC.BAT or CONFIG.SYS file, type REM in front of each line that loads a network driver. Or, with DOS 6.x or later press F5 as DOS starts, to bypass the drivers.
2. Insert the PRO/100+ adapter disk in a drive, switch to that drive and at the DOS prompt, type SETUP and press Enter.
3. Select the adapter from the menu.
4. Select Automatic Setup from the Main menu. Then follow the instructions on the screen. Setup displays the adapter's configuration and then runs a series of diagnostic tests that make sure the adapter and network are functioning properly. If Setup finds a problem, it displays the results and some possible solutions.
5. When Setup finishes the tests, you'll see the Install Network Drivers screen.
6. Select the driver you want to install. Setup can install a NetWare client driver for you. If you want to install other drivers, Setup displays a readme file with installation instructions.

### **PCI Installation Tips**

PCI computers are designed to automatically configure add-in cards each time the computer starts. Your PCI computer sets the I/O address and IRQ level for your network adapter when the computer starts. These values cannot be changed by Intel adapter software. If you experience a problem when the computer starts, you may need to follow additional configuration steps.

Manual configuration is possible through the BIOS

setup utility.

Some common PCI solutions are listed here:

- Bus-master-enabled slots.
- Reserve interrupts (IRQs) and/or memory addresses for ISA adapters. This prevents PCI cards from trying to use the same settings ISA cards are using.
- Enable the PCI slot. Update your PCI BIOS. An updated PCI system BIOS can correct some PCI configuration problems. Call your computer manufacturer to see if an updated BIOS version is available for your computer.
- Configure the slot for level-triggered interrupts. The slot the adapter is using must be configured for level-triggered interrupts rather than edge-triggered interrupts.

## **3.8 Installing DiskOnChip of M-systems**

### **3.8.1 Installing the Disk-On-Chip 2000 :**

When installing or removing the DiskOnChip be sure to first touch a grounded surface to discharge any static electricity from your body.

Use the following procedure to install the DiskOnChip:

1. Align pin 1 of the DiskOnChip with the pin1 of socket.
2. Push the DiskOnChip into the socket carefully until it is fully seated.
3. Check to make sure the DiskOnChip is installed securely, and there are no bent pins.

**Caution: The DiskOnChip may be permanently damaged if installed incorrectly.**

---

4. To install the DiskOnChip as drive C on a system without a hard disk, set the CMOS setup of drive C to NOT INSTALLED (indicating that no physical magnetic disk is installed), and reboot the computer. The DiskOnChip 2000 will install as drive C. The DiskOnChip needs to be formatted with the system files in order to be a bootable drive.

### **3.8.2 Configuring the DiskOnChip 2000 as the boot device:**

In order to configure the DiskOnChip as the boot device, the operating system files need to be copied into it. Copying the operating system files into DiskOnChip should be done like in any other hard disk. The following is an example of a typical initialization process:

1. Set the DiskOnChip as a regular drive in your system (not a boot drive).
2. Install a bootable floppy diskette in drive A, and boot the system from drive A.
3. At the DOS prompt, type `SYS C:` to transfer the DOS system files to the DiskOnChip. (assuming the DiskOnChip is installed as drive C)
4. Copy any files needed into DiskOnChip.
5. Remove floppy diskette and reboot the system. The system will boot from the DiskOnChip and will allow you to run and access any files that have been copied into the DiskOnChip.

### **3.8.3 Configuring the DiskOnChip 2000 as the first drive:**

The DiskOnChip can be configured as the last drive (default) or as the first drive in the system. When configured as the last drive, the DiskOnChip is installed as drive D if there is

another hard drive installed, and as drive C if no other hard drive is installed. When configured as the first drive, the DiskOnChip is always installed as drive C. To configure the DiskOnChip as first drive, proceed as follows:

1. Boot the system and make sure the DiskOnChip is installed correctly as drive D.
2. At the DOS prompt type `DUPDATE D: /FIRST / S:DOC2000.EXB`
3. After rebooting the system, the DiskOnChip will appear as drive C:

# C h a p t e r 4

## BIOS Configuration

Award's BIOS ROM has a built-in Setup program that allows users to modify the basic system configuration. This type of information is stored in battery-backup RAM (CMOS RAM). When the power is off, it will retain the Setup information.

### 4.1 Entering Setup

Power on the computer and press <Del> immediately to allow you to enter Setup. The other way to enter Setup is to power on the computer, when the message below appears briefly at the bottom of the screen during POST (Power On Self Test), press <Del> key or simultaneously press <Ctrl>, <Alt>, and <Esc> Keys.

**TO ENTER SETUP BEFORE BOOT PRESS <CTRL-ALT-ESC>  
OR <DEL> KEY**

As long as this message is present on the screen you may press the <Del> key (the one that shares the decimal point at bottom of the numeric keypad) to access the Setup program. In a moment, the main menu of the Award SETUP program will appear on the screen.

You may use the cursor up/down keys to highlight the individual menu items. As you highlight each item, a brief description of that item's function appears in the lower windows. If you have a color monitor you can use the <Shift>, <F2> keys to scroll through the various color combinations available.

## 4.2 The Main Menu

Once you enter Award's BIOS CMOS Setup Utility, the Main Menu will appear on the screen. The Main Menu allows you to select from ten setup functions and two exit choices. Use arrow keys to select among the items and press <Enter> to accept or enter the sub-menu.

Phoenix – Award BIOS CMOS Setup Utility	
Standard CMOS Features	Frequency/Voltage Control
Advanced BIOS Features	Load Fall-Safe Defaults
Advanced Chipset F Features	Load Optimized Defaults
Integrated Peripherals	Set Supervisor Password
Power Management Setup	Set User Password
PnP/PCI Configuration	Save & Exit Setup
PC Health Status	Exit Without Saving
Esc : Quit	↑ ↓ ← → : Select Item
F10 : Save & Exit Setup	
Time, Date, Hard Disk Type.....	

## 4.3 Standard CMOS Setup

Phoenix - Award BIOS CMOS Setup Utility		
Standard CMOS Features		
Date (mm:dd:yy)	<b>Thu , Feb 7 2002</b>	Item Help
Time (hh:mm:ss)	<b>23 : 1 : 16</b>	Menu Level
IDE Primary Master	[ None ]	
IDE Primary Slave	[ None ]	Change the day. Month.
IDE Secondary Master	[RICOH CD-R/RW MP721]	year and century
IDE Secondary Slave	[ None ]	
Drive A	[1.44M. 3.5 in. ]	
Drive B .	[ None ]	
Floppy 3 Mode Support	[ Disable ]	
Video	[EGA/VGA]	
Halt On	[All . But Keyboard ]	
Base Memory	640K	
Extended Memory	251120K	
Total Memory	252144K	

↑↓→←: Move Enter : Select      +/-PU/PD:Value F10:Save      Esc:Exit F1:General Help  
 F5:Previous Values                  F6:Fail-Safe Defaults          F7:Optiomized Defaults



## 4.4 IDE Primary Master

Phoenix – Award BIOS CMOS Setup Utility		Item Help
IDE Primary Master		
IDE HDD Auto-Detection	[ Press Enter ]	Menu Level  To auto-detect the HDD's size, head.....on This channel
IDE Primary Master	[ Auto ] [ Auto ]	
Capacity	0 MB	
Cylinder	0	
Head	0	
Precomp	0	
Landing Zone	0	
Sector	0	
↑↓→←: Move Enter : Select      +/-PU/PD: Value F10: Save      Esc: Exit F1: General Help F5: Previous Values                  F6: Fail-Safe Defaults              F7: Optimized Defaults		

## 4.5 Advanced BIOS Features

Phoenix – Award BIOS CMOS Setup Utility		
Advanced BIOS Features		
		Item Help
Virus Warning	[ Disabled ]	Menu Level  Allows you to choose The VIRUS warning Feature for IDE Hard Disk boot sector Protection. If this Function is enabled And someone attempt to write data into this area , BIOS will show a warning message on Screen and alarm beep
CPU Internal Cache	[ Enabled ]	
External Cache	[ Enabled ]	
CPU L2 Cache ECC Checking	[ Enabled ]	
Quick Power On Self Test	[ Enabled ]	
First Boot Device	[ SCSI ]	
Second Boot Device	[ Floppy ]	
Third Boot Device	[ CDROM ]	
Boot Other Device	[ Disabled ]	
Swap Floppy Device	[ Disabled ]	
Boot Up Floppy Seek	[ Enabled ]	
Boot Up Numlock Status	[ On ]	
Gate A20 Option	[ Fast ]	
Typematic Rate Setting	[ Disabled ]	
* Typematic Rate (Chars/Sec)	6	
* Typematic Delay (Msec)	250	
Security Option	[ Setup ]	
OS Select For DRAM > 64MB	[ Non-OS2 ]	
Video BIOS Shadow	[ Enabled ]	
↑↓→←: Move Enter : Select      +/-PU/PD:Value F10:Save      Esc:Exit F1:General Help F5:Previous Values                  F6:Fail-Safe Defaults              F7:Optiomized Defaults		

## 4.6 Advanced Chipset Features

Phoenix – Award BIOS CMOS Setup Utility		
Advanced Chipset Features		
		Item Help
DRAM Timing By SPD	[ Disabled ]	Menu Level
* DRAM Clock	HOST Clock	
* SDRAM Cycle Length	3	
* Bank Interleave	Disabled	
Memory Hole	[ Disabled ]	
P2C/C2P Concurrency	[ Enabled ]	
System BIOS Cacheable	[ Disabled ]	
Video RAM Cacheable	[ Disabled ]	
AGP Aperture Size	[ 64M ]	
AGP Driving Control	[ Auto ]	
* AGP Driving Value	DA	
AGP Fast Write	[ Disabled ]	
OnChip USB	[ Enabled ]	
USB Keyboard Support	[ Enabled ]	
USB Mouse Support	[ Disabled ]	
OnChip Sound	[ Auto ]	
CPU to PCI Write Buffer	[ Enabled ]	
PCI Dynamic Bursting	[ Enabled ]	
PCI Master 8 WS Write	[ Enabled ]	

↑↓→←: Move Enter : Select      +/-PU/PD:Value F10:Save      Esc:Exit F1:General Help  
 F5:Previous Values      F6:Fail-Safe Defaults      F7:Optiomized Defaults

## 4.7 Integrated Peripherals

Phoenix – Award BIOS CMOS Setup Utility		
Integrated Peripherals		
		Item Help
OnChip IDE channe 10	[ Enabled ]	Menu Level
OnChip IDE channe 11	[ Enabled ]	
IDE Prefetch Mode	[ Enabled ]	
Primary Master PIO	[ Auto ]	
Primary Slave PIO	[ Auto ]	
Secondary Master PIO	[ Auto ]	
Secondary Slave PIO	[ Auto ]	
Primary Master UDMA	[ Auto ]	
Primary Slave UDMA	[ Auto ]	
Secondary Master UDMA	[ Auto ]	
Secondary Slave UDMA	[Auto ]	
Init Display First	AGP	
IDE HDD Block Mode	[ Enabled ]	
Onboard FDD Controller	[ Enabled ]	
Onboard Serial Port 1	[3F8/IRQ4 ]	
Onboard Serial Port 2	[ 2F8/IRQ3 ]	
UDMA 2 Mode	[ Standard ]	
* IR Function Duplex	Half	
* TX , RX inverting enable	No , Yes	

↑↓→←: Move Enter : Select      +/-PU/PD:Value F10:Save      Esc:Exit F1:General Help  
 F5:Previous Values                  F6:Fail-Safe Defaults              F7:Optiomized Defaults

## 4.8 Power Management Setup

Phoenix – Award BIOS CMOS Setup Utility		
Power Management Setup		
		Item Help
ACPI function	[ Enabled ]	Menu Level
Power Management	[ Press Enter ] ※1	
ACPI Suspend Type	[ S1(POS) ]	
PM Control by APM	[ Yes ]	
Video Off Option	[ Suspend → Off ]	
Video Off Method	[ DPMS Support ]	
MODEM Use IRQ	[ 3 ]	
Soft-Off by PWRBTN	[ Delay 4 Sec ]	
State After Power Failure	[ Off ]	
Wake Up Events	[ Press Enter ] ※2	

↑↓→←: Move Enter : Select F5: Previous Values	+/-PU/PD: Value F10: Save F6: Fail-Safe Defaults	Esc: Exit F1: General Help F7: Optimized Defaults
--	---	--

## 4.9 PC Health Status

Phoenix – Award BIOS CMOS Setup Utility																			
PC Health Status																			
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 2px;">Current CPU Temp</td> <td style="padding: 2px;">25°C/78°F</td> </tr> <tr> <td style="padding: 2px;">Current System Temp</td> <td style="padding: 2px;">26°C/80°F</td> </tr> <tr> <td style="padding: 2px;">Current Cpu fan Speed</td> <td style="padding: 2px;">4748 RPM</td> </tr> <tr> <td style="padding: 2px;">Vcore</td> <td style="padding: 2px;">1.77 V</td> </tr> <tr> <td style="padding: 2px;">2.5V</td> <td style="padding: 2px;">2.56 V</td> </tr> <tr> <td style="padding: 2px;">3.3V</td> <td style="padding: 2px;">3.38 V</td> </tr> <tr> <td style="padding: 2px;">5V</td> <td style="padding: 2px;">4.95 V</td> </tr> <tr> <td style="padding: 2px;">12V</td> <td style="padding: 2px;">11.88 V</td> </tr> </table>	Current CPU Temp	25°C/78°F	Current System Temp	26°C/80°F	Current Cpu fan Speed	4748 RPM	Vcore	1.77 V	2.5V	2.56 V	3.3V	3.38 V	5V	4.95 V	12V	11.88 V	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="text-align: center; padding: 2px;">Item Help</th> </tr> <tr> <td style="padding: 2px;">Menu Level</td> </tr> </table>	Item Help	Menu Level
Current CPU Temp	25°C/78°F																		
Current System Temp	26°C/80°F																		
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5V	4.95 V																		
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Item Help																			
Menu Level																			
<table style="width: 100%; border: none;"> <tr> <td style="width: 33%; border: none;">                     ↑↓→←: Move Enter : Select                      F5:Previous Values                 </td> <td style="width: 33%; border: none;">                     +/-PU/PD:Value F10:Save                      F6:Fail-Safe Defaults                 </td> <td style="width: 33%; border: none;">                     Esc:Exit F1:General Help                      F7:Optiomized Defaults                 </td> </tr> </table>		↑↓→←: Move Enter : Select F5:Previous Values	+/-PU/PD:Value F10:Save F6:Fail-Safe Defaults	Esc:Exit F1:General Help F7:Optiomized Defaults															
↑↓→←: Move Enter : Select F5:Previous Values	+/-PU/PD:Value F10:Save F6:Fail-Safe Defaults	Esc:Exit F1:General Help F7:Optiomized Defaults																	

## 4.10 Frequency/Voltage Control

Phoenix – Award BIOS CMOS Setup Utility		
Frequency/Voltage Control		
Auto Detect DIMM /PCI CLK	[ Enabled ]	Item Help
Spread Spectrun	[ 0.25% ]	
		Menu Level
<p>                     ↑↓→←: Move Enter : Select      +/-PU/PD:Value F10:Save      Esc:Exit F1:General Help                      F5:Previous Values                  F6:Fail-Safe Defaults              F7:Optiomized Defaults                 </p>		

## 4.11 Load Fall-Safe Defaults

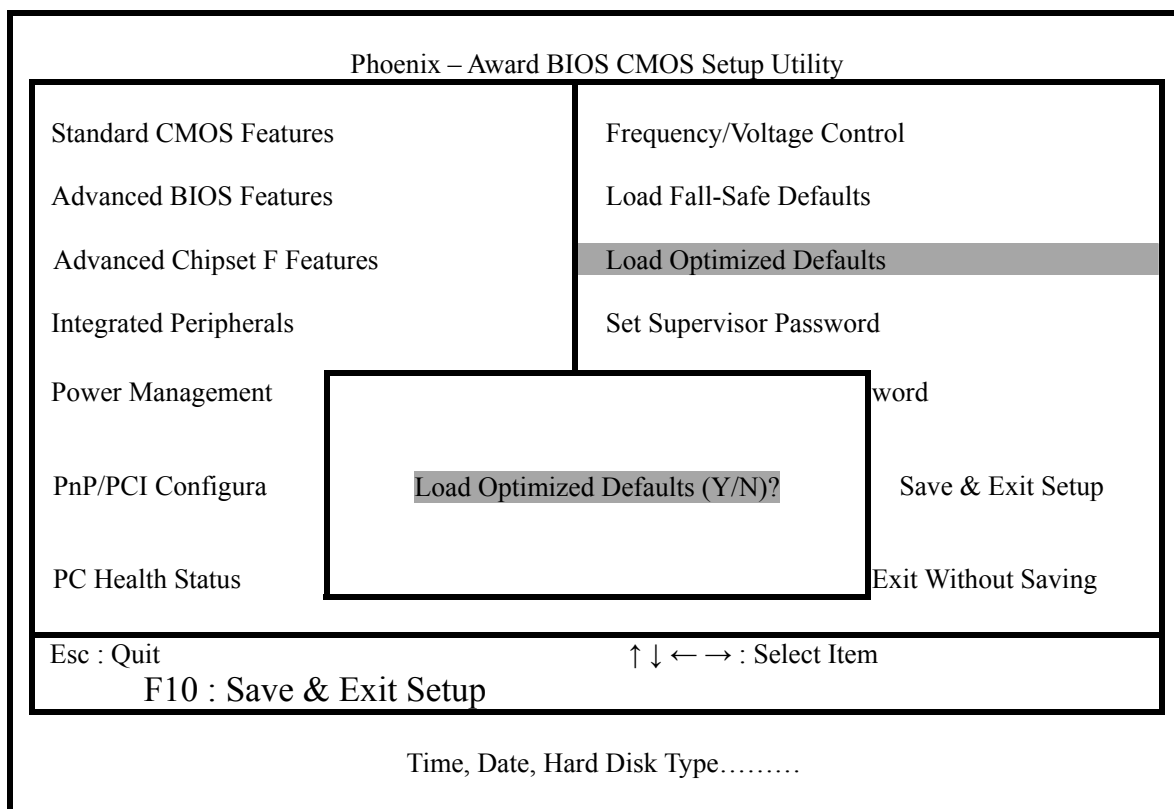
Phoenix – Award BIOS CMOS Setup Utility

Standard CMOS Features	Frequency/Voltage Control
Advanced BIOS Features	<b>Load Fall-Safe Defaults</b>
Advanced Chipset F Features	Load Optimized Defaults
Integrated Peripherals	Set Supervisor Password
Power Management	word
PnP/PCI Configura	<b>Load Fall-Safe Defaults (Y/N)?</b>
PC Health Status	Exit Without Saving
Esc : Quit	↑ ↓ ← → : Select Item
<b>F10 : Save &amp; Exit Setup</b>	

Time, Date, Hard Disk Type.....



## 4.12 Load Optimized Defaults



## 4.13 Power On Boot

After you made all the changes to the CMOS values, and the system cannot boot up with the CMOS values selected in Setup, restart the system by turning it OFF then ON or by pressing the "RESET" button on the system case. You may also restart it by simultaneously pressing <Ctrl>, <Alt>, and <Delete> keys. Upon restarting the system, immediately press <Insert> to load the BIOS default CMOS value for boot up.

## 4.14 BIOS Reference – POST Codes

AWARD BIOS provides all IBM standard Power On Self Test (POST) routines as well as enhanced AWARD BIOS POST routines. The POST routines support CPU internal diagnostics. The POST checkpoint codes are accessible via the Manufacturing Test Port (I/O port 80h).

Whenever a recoverable error occurs during the POST, the system BIOS will display an error message describing the message and explaining the problem in detail so that the problem can be corrected.

---

**NOTE:** POST codes output to the port address 80h typically.

---

POST (hex)	Description
C0	1. Turn off OEM specific cache, shadow... 2. Initialize all the standard devices with default values Standard device includes: -DMA controller (8237) -Programmable Interrupt Controller (8259) -Programmable Interval Timer (8254) -RTC chip
C1	Auto-detection of onboard DRAM & Cache
C3	1. Test system BIOS checksum 2. Test the first 256K DRAM 3. Expand the compressed codes into temporary DRAM area including the compressed System BIOS & Option ROMs
C5	Copy the BIOS from ROM into E0000-FFFFFF shadow RAM so that POST will go faster
01-02	Reserved
03	Initialize EISA registers (EISA BIOS only)
04	Reserved
05	1. Keyboard Controller Self-Test 2. Enable Keyboard Interface
06	Reserved
07	Verifies CMOS's basic R/W functionality

<b>POST (hex)</b>	<b>Description</b>
BE	Program defaults values into chipset according to the MODBINable Chipset Default Table
08	Test the first 256K DRAM
09	<ol style="list-style-type: none"> <li>1. Program the configuration register of Cyrix CPU according to the MODBINable Cyrix Register Table</li> <li>2. OEM specific cache initialization (if needed)</li> </ol>
0A	<ol style="list-style-type: none"> <li>1. Initialize the first 32 interrupt vectors with corresponding Interrupt handlers Initialize INT no from 33-120 with Dummy(Spurious) Interrupt Handler</li> <li>2. Issue CUID instruction to identify CPU type</li> <li>3. Early Power Management initialization (OEM specific)</li> </ol>
0B	<ol style="list-style-type: none"> <li>1. Verify the RTC time is valid or not</li> <li>2. Detect bad battery</li> <li>3. Read CMOS data into BIOS stack area</li> <li>4. PnP initialization include (PnP BIOS only) -Create resource map from ESCD</li> <li>5. Assign IO &amp; Memory for PCI devices (PCI BIOS only)</li> </ol>
0C	Initialization of the BIOS Data Area (40 : 0N – 40:FF)
0D	<ol style="list-style-type: none"> <li>1. Program some of the Chipset values according to Setup.(Early Setup Value Program)</li> <li>2. Measure CPU speed for display &amp; decide the system clock speed</li> <li>3. Video initialization including Monochrome, CGA, EGA/VGA. If no display device is found, the speaker will beep</li> </ol>
0E	<ol style="list-style-type: none"> <li>1. Initialize the APIC (Multi-Processor BIOS only)</li> <li>2. Test video RAM (If Monochrome display device is found)</li> <li>3. Shown messages include: <ul style="list-style-type: none"> <li>-Award Logo, Copyright string, BIOS Date code &amp; Part No.</li> <li>-OEM specific sign on messages</li> <li>-Energy Star Logo (Green BIOS ONLY)</li> <li>-CPU brand, type &amp; speed</li> <li>-Test system BIOS checksum (Non-Compress Version only)</li> </ul> </li> </ol>
0F	DMA channel 0 test
10	DMA channel 1 test
11	DMA page registers test
12-13	Reserved

<b>POST (hex)</b>	<b>Description</b>
14	Test 8254 Timer 0 Counter 2.
15	Test 8259 interrupt mask bits for channel 1
16	Test 8259 interrupt mask bits for channel 2
17	Reserved
19	Test 8259 functionality
1A-1D	Reserved
1E	If EISA NVM checksum is good, then execute EISA initialization (EISA BIOS only)
1F-29	Reserved
30	Detect Base Memory & Extended Memory Size
31	1. Test Base Memory from 256K to 640K 2. Test Extended Memory from 1M to the Max. of the memory
32	1. Display the Award Plug & Play BIOS Extension message (PnP BIOS only) 2. Program onboard super I/O chip (if any) including COM ports, LPT ports, FDD port. according to setup value
33-3B	Reserved
3C	Set flag to allow users to enter CMOS Setup Utility
3D	1. Initialize Keyboard 2. Install PS2 mouse
3E	Try to turn on Level 2 cache Note: Some chipset may need to turn on the L2 cache on this stage. But usually, the cache is turned on later in POST 61h
3F-40	Reserved
BF	1. Program the rest of the Chipset value according to Setup. (Later Setup Value Program) 2. If auto-configuration is enabled, programmed the chipset with pre-defined values in the MODBINable Auto-Table
41	Initialize floppy disk drive controller
42	Initialize Hard drive controller
43	If it is a PnP BIOS, initialize serial & parallel ports
44	Reserved
45	Initialize math coprocessor.
46-4D	Reserved

POST (hex)	Description
4E	If any error is detected (such as video, kb...), show all the error messages on the screen & wait for user to press <F1> key
4F	1. If a password is needed, ask for the password 2. Clear the Energy Star Logo (Green BIOS only)
50	Write all CMOS values currently in the BIOS stack area back into the CMOS
51	Reserved
52	1. Initialize all ISA ROMs 2. Later PCI initialization (PCI BIOS only) -assign IRQ to PCI devices -initialize all PCI ROMs 3. PnP Initialization (PnP BIOS only) -assign IO, Memory, IRQ & DMA to PnP ISA devices -initialize all PnP ISA ROMs 4. Program shadows RAM according to the Setup settings 5. Program parity according to Setup setting 6. Power Management Initialization -Enable/Disable global PM -APM interface initialization
53	1. If it is NOT a PnP BIOS, initialize serial & parallel ports 2. Initialize time value in the BIOS data area by translating the RTC time value into a timer tick value
60	Setup the Virus Protection (Boot Sector Protection) function according to Setup setting
61	1. Try to turn on Level 2 cache Note: if L2 cache is already turned on in POST 3E, this part will be skipped 2. Set the boot up speed according to the Setup setting 3. Last chance for Chipset initialization 4. Last chance for Power Management initialization (Green BIOS only) 5. Show the system configuration table
62	1. Setup daylight saving according to Setup value 2. Program the NUM Lock, typematic rate & typematic speed according to the Setup setting
63	1. If there is any change in the hardware configuration, update the ESCD information (PnP BIOS only) 2. Clear the memory that has been used 3. Boot the system via INT 19H

POST (hex)	Description
FF	System Booting. This means that the BIOS already pass the control right to the operating system

***Unexpected Errors:***

POST (hex)	Description
B0	Interrupt occurs in protected mode.
B1	Unclaimed NMI occurs

## 4.15 Updating BIOS

You should prepare a diskette for the updated BIOS program in the package. The update procedures are as follows:

1. Insert the diskette with the file "AWDFLASH.EXE" in drive A or B.
2. Type AWDFLASH under the prompt A or B.
3. The screen will ask you to enter the filename for programming. Please enter the 'filename' for the updated BIOS that came from your agent. Meanwhile, please type 'N' to answer the question 'Do you want to save BIOS (y/n)?' under the bottom of the screen.
4. After that, please type 'Y' to answer the question 'Are you sure to program (y/n)?' on the bottom line of the current screen.
5. Turn off the power after the system updated the BIOS.
6. Turn on the power again.